Joint University Program for Air Transportation Research

Princeton University

June 21, 2001

- **Large Amplitude Maneuvering Using Adaptive Critic Control, Silvia Ferrari**
- **Synchronous Maneuvering of Uninhabited Air Vehicles, Olivier Laplace**
- **The Phoenix Project, RFS for Michael Anthony, Christopher Gerson, and Primoz Skraba**
- **Appleseed Cluster for Parallel Computation, RFS**

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The Phoenix Project

Michael Anthony, Christopher Gerson, Primoz Skraba

- **Flight test aircraft for demonstration of coordinated flight of uninhabited air vehicles**
- **GPS, angular rates, linear acceleration, air data**
- **Throttle, elevator, rudder, ailerons**
- **Compaq Cassiopeia PDA, Tattletale-8 data logger, wireless LAN communication**
- **Fail-safe reversion to R/C control**
- **Anti-aliasing low-pass filters for accelerometers**
- **Digital LQG controller**
- **Flight tests and modular testing**

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Appleseed Cluster for Parallel Computation

- 20 surplus PowerMac 9600/233 MHz computers
- Each computer: SPECfp95 = ~8 (~50-65 MFlops, aver. over 3 programs ~8 x SunSparc 10/40))
- Cluster (100% efficiency): SPECfp95 = 134-172 (~1 GFlop, av.; ~1 Cray X-MP or 3-4 Cray Y-MPs)
- MacMPI/PPC; OS 9 and X; AppleTalk
- Applications:
  - Stochastic Robustness Analysis and Design
  - Computational Fluid Dynamics